

Appl. No. 09/520,686
Amdt. dated March 31, 2004
Reply to Office Action of March 24, 2004

Amendments to the Claims

1. (*Original*) A method of determining a centroid of a target set in a wafer, said method comprising the steps of:
 - a) receiving said wafer, said wafer having said target set formed therein, said target set including a plurality of target shapes separated by a material;
 - b) passing a signal over said plurality of target shapes and over said material of said target set;
 - c) receiving a return signal that is reflected from said plurality of target shapes and from said material separating said plurality of target shapes within said target set;
 - d) identifying a location of each of at least one extrema of said return signal reflected from said material separating said plurality of target shapes within said target set; and
 - e) determining said centroid of said target set from said at least one extrema of said return signal.
2. (*Original*) The method recited in Claim 1 wherein said extrema is a maxima point.
3. (*Original*) The method recited in Claim 1 wherein said signal is a laser signal.
4. (*Original*) The method recited in Claim 2 wherein said maxima point is determined from a slope of an intensity of said return signal, said slope existing on either side of said maxima point.
5. (*Original*) The method recited in Claim 1 wherein said plurality of target shapes includes two rectangular target shapes.

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6. (*Original*) The method recited in Claim 5 wherein only one maxima point is generated.
7. (*Original*) The method recited in Claim 6 wherein said centroid is located at said one maxima point.
8. (*Original*) The method recited in Claim 1 wherein said plurality of target shapes includes four rectangular target shapes.
9. (*Original*) The method recited in Claim 8 wherein said extrema of said step d) are comprised of three maxima points, said three maxima points including two outer maxima points and a center maxima point.
10. (*Original*) The method recited in Claim 9 wherein a location of said centroid is based on a median location between said two outer maxima points, averaged with a location of said center maxima point.
11. (*Original*) The method recited in Claim 9 wherein a location of said centroid is based on a centroid calculation using a location of all three maxima points.
12. (*Original*) A stepper for aligning a wafer, said stepper comprising:
 - a processor; and
 - a computer readable memory, said computer readable memory coupled to said processor, said computer readable memory containing program instructions stored therein

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that when executed over said processor implement a method for determining a centroid of a target set in said wafer, said method comprising the steps of:

a) receiving said wafer, said wafer having said target set formed therein, said target set including a plurality of target shapes separated by a material;

b) passing a signal over said plurality of target shapes and over said material of said target set;

c) receiving a return signal that is reflected from said plurality of target shapes and from said material separating said plurality of target shapes within said target set;

d) identifying a location of each of at least one extrema of said return signal from said material separating said plurality of target shapes within said target set; and

e) determining said centroid of said target set from said at least one extrema of said return signal.

13. *(Original)* The method recited in Claim 12 wherein said signal is a laser light signal.

14. *(Original)* The method recited in Claim 12 wherein said extrema is a maxima point determined from a slope of said intensity of said return signal, said slope existing on either side of said maxima point.

Claims 15-22 *(Cancelled)*